REMARKS

Claims 1, 12, 17 and 19 have been amended. Claim 9 has been canceled.

Reconsideration of the application is respectfully requested for the following reasons:

1. Rejection of Claims 1-20 Under 35 U.S.C. §103(a)

Claims 1-8, 11-15, and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Boyington et al. (Hereinafter Boyington) (U.S. 6,377,897) and Chien et al. (Hereinafter Chien).

Applicant respectfully traverses this rejection.

Particularly, the new art found by the Examiner still fails to disclose an acceleration factor related to the relationship between a testing time of the testing environment and a real time of a normal operating environment. As disclosed in column 3, lines 61-63 and column 4 lines 24-29 of Boyington, the failure rate calculation 250 can include the determination of the instantaneous rate of failure, in other words, the point on the failure slope at which the calculation is made. The instantaneous rate of failure is equal to the point on the failure slope at which the calculation is made. **Using this rate, when the slope slows to a certain level, the computer can assess that the infant mortalities have been identified and the remaining ICs will need no additional burn-in.** It is quite clearly that the determination of the instantaneous rate of failure mentioned above is different from the acceleration factor of the claimed invention which is related to the relationship between a testing time of the testing environment and a real time of a normal operating environment. Moreover, Boyington never discloses a

transforming process using the acceleration factor function to transform the testing time function into a real time function. Boyington only uses the variation of the instantaneous rate of failure (slope) and compares the instantaneous rate of failure with specific infant mortalities identified by a computer to determine a best burn-in time. The failure rate calculation 250 of Boyington can also consider statistical analysis of past performance data, extracted from the performance database. Such analysis of the database enables the burn-in testing to be dynamically fine-tuned as the database grows. This process would allow the burn-in cycle to become more reliable through time. The failure rate calculation 250 of Boyington only enables the burn-in testing to be dynamically fine-tuned as the database grows so that Boyington never discloses a transforming process using the acceleration factor function to transform the testing time function into a real time function.

The acceleration factor function of the claimed invention can be a constant, a linear function or a non-linear function. When the acceleration factor function is a constant, the result of performing the simulating process under the testing time is similar to the result of performing the simulating process under the real time, the only difference is the effect of constant. However, when the acceleration factor function is a linear function or a non-linear function, because the transformation between the real time and the testing time is not multiplied by a constant or divided by a constant, the knee point of the testing time function usually is different from the knee point of the real time function.

Obviously, because the claimed invention never uses any mathematical formula and also never uses any external parameter which is not acquired from the testing records, and also because the claimed invention is a numerical approach method, it is reasonable that the claimed invention can decide the error range by "try and error" and also

can decide the precision of the acquired accumulated failure rate real time function.

The essential scope of the claims is the following (herein, only claims 1, 12 and 19 are independent claims):

(a) Perform a life-time testing process (also called a stress test) to acquire the life distribution of the tested samples.

(b) Perform the "trial and approach" procedure (also called try and error) to acquire a simulated curve, such as the test time function, where the difference between the simulated curve and the life distribution is minimized. Herein, it is well known that the "trial and approach" procedure is used to minimize the difference between the data and the simultaneous results.

(c) Transforms the results acquired under a testing environment into a real time life distribution by using the acceleration factor function acquired from the life-time testing process.

(d) Determine a best Burn-in time by using the real time life distribution, and further calculates some information such as the reliability of the test samples.

(e) No formula or predetermined database is used to acquire the failure rate and the best burn-in time. At most, the stored experimental data are used to determine the period of the stress test.

(f) Only perform the life-time testing process during a specific period, which means the life-time testing process is only performed once in the invention. After the life-time testing process is performed, the simulated curve is acquired by the measured results of the life-time testing process.

(Lines 13-19 of page 11 and lines 20-23 of page 12 of the specification discuss how to improve the results but nothing

is related to perform the life-time testing process more than one time.)

(g) The calculation of the real time function (a result acquired from the simulated curve and the acceleration factor function) at least is calculated for both the infant mortality period and the normal life period. Hence, the best burn-in time could be acquired, and some information, such as the reliability of the sold products and the average lifetime of the sold product, also could be acquired.

The pending claims have the previous limitations, such as performing the life-time testing process only once, calculating results such as reliability, applying the acceleration factor function to translate between the testing time and the real time, applying the "trial and approach" procedure (between different time scales) and transforming by using the acceleration factor function. Besides, while the results during both infant mortality period and normal life period are acquired by the invention, it is implied that the pending claims are related to cost and mean residual life because the qualify of products during the normal life period is important for the contemporary industry.

Furthermore, by carefully analyzing Boyington, applicant essentially summarizes Boyington's invention as follows.

(a) Acquire the core time by historical data. (The historical data could be acquired by performing experiments.)

(b) Perform the stress test (corresponding to the life-time testing process of the claimed invention) during a period which is equal to the core time, which means performing the stress test from "time = 0" to "time = core time":

(c) Analysis of the measured data acquired by the stress test.

(d) Decided whether the slope of the function of both failure rate and time is smaller than a predetermined value during the period of the stress test.

(e) If the answer of (d) is negative, perform (a)-(c) again, which means performing the stress test from "time = core time" to "time = 2 multiplies core time"; and

If the answer of (d) is positive, uses the specific time, where the slope is just smaller than the predetermined value, to be the best burn-in time.

Herein, please to the following parts of Boyington: FIG. 2, col. 3 lines16-54, and col. 3 line 61 to col. 4 line 29.

Moreover, col. 3 lines 19-22 of Boyington clearly express that "In general, the method starts with determining a core time. From historical data of similar ICs, a core time is calculated, which is the time of stress that is to be applied to all ICs in the batch." Indisputably, Boyington considers his "core time" as the period that ICs are tested in the batch. Hence, Boyington's "core time" corresponds to the testing time of the testing environment. Besides, col.3 lines 43-44 of Boyington further express "the core period (i.e. the minimum burn-in time)", and then the core period (or core time) is directly corresponding the burn-in time again. Further, FIG. 2 of Boyington shows that the core is acquired in the "DETERMINE CORE AND INITIA READ POINTS, 215" only after "ICS INSERTED INTO BURN-IN BOARDS, 205" and "BOARDS IN OVENS, 210". Clearly the core time is acquired directly from burn-in (the testing environment) and is independent of the normal operating environment.

Further, regarding to Chien, applicant agrees that Chien really present a simulation method that eliminates the burn-in time without the usage of parameter(s). However, applicant also finds that Chien has the following characteristics:

(a) Chien only considers how to perform the simulation by using time-dependent data. In fact, Chien never considers the transformation between the testing time and the real time.

(b) Chien never uses the acceleration factor function.

Herein, please at least refer to the following parts of Chien: FIG. 1, page 462 (A. U-shape Failure Rate Function), page 466 (V. Examples), and partial pages 463-466 (B. Simulation and D Optimal Burn-In time).

Regarding Matsuoka, applicant does not argue the Examiner's viewpoint about Matsuoka. In other words, applicant says nothing about what Matsuoka is.

Accordingly, by carefully comparing the invention with Boyington, applicant reasonably finds the following important differences:

(a) The invention only performs the stress test (the life-time testing process) once during a specific period. In fact, even if the measured data are insufficient, the invention still solves the problem by other methods. Please refer to page 11 lines 13-19 and page 12 lines 20-23. In contrast, Boyington may perform the stress test several times until the specific time that the slope is smaller than a predetermined value. Clearly, the times that the stress test is performed is a strong difference. Moreover, the total periods that the stress test is performed by Boyington must not be smaller than the best burn-in time. In contrast, the invention allows that the period of the performed stress test is smaller than the best burn-in time. Herein, the difference could easily be found from the pending claims for no loop action being described.

(b) The invention calculates the best burn-in time and further calculates the results, such as reliability, in both the infant mortality period and the normal life period. In contrast, Boyington only calculate the best burn-in time and does nothing about the results in the normal

life period. Thus, by referring to Boyington, there is no motivation to study the results in the normal period. Clearly, Boyington only relates to part of the invention.

(c) The invention uses the acceleration factor function to transform between the testing time and the real time. Boyington only uses one time scale (the testing time) and never discloses anything about the transformation between different time scales. Clearly, Boyington discloses nothing about this part of the invention. Herein, the difference could be easily found from the pending claims for the acceleration factor function being clearly described.

(d) The invention is related to both "cost" and "mean residual life". Boyington never discloses anything about these subjects. Clearly, Boyington only relates to part of the invention.

(e) The invention uses a simulated curve to fits the measured data of the performed stress test, and limits the differences between the simulated curve and the measured data is minimized. Boyington directly uses the measured data to find the slopes without any simulation, and no minimizing difference process is performed. Clearly, Boyington only relates to part of the invention.

According to the previous point (a)-(e), applicant emphasizes that the differences between the pending claims and Boyington are nonobvious.

Furthermore, applicant emphasizes that the Examiner's viewpoint about Chien is incorrect. For example, Chien never discloses the item "acceleration factor function" (the term is not found in Chien). Hence, because the Examiner only uses Matsuoka to reject claims 19-20, the differences between claims 1-18 and Boyington are more than what Chien discloses.

Besides, applicant emphasizes that the scope of claims 19-20 is the combination of the optimizing process and the scope of claims 1-18, which could be easily found by comparing claims 19-20 with claims 1-18. Hence, while Matsuoka is related to a monitored burn-in system and discloses nothing about the details of the optimizing process, claims 19-20 are strongly different from the combination of Boyington, Chien and Matsuoka.

Conclusion

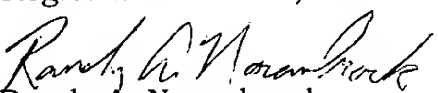
In light of the above remarks to the claims, Applicant contends that Claims 1-20 are patentable thereover. The claims are in condition for favorable consideration and allowance of all the claims are most respectfully requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

LOWE HAUPTMAN GILMAN & BERNER, LLP

Benjamin J. Hauptman
Registration No. 29,310



By: Randy A. Noranbrock
Registration No. 42, 940

1700 Diagonal Road, Suite 310
Alexandria, Virginia 22314
Telephone: (703) 684-1111
Facsimile: (703) 518-5499
Date: May 27, 2003